

Rediscovery of the Yellow-bellied Sea Snake, *Hydrophis platurus* (Linnaeus, 1766) in Máncora, northern Perú

Javier Quiñones^{1*}, Karla García Burneo² and Claudio Barragán³

1 Laboratorio Costero de Pisco, Instituto del Mar del Perú (IMARPE), Av. Los Libertadores A-12, Urb. El Golf, Paracas, Ica, Perú.

2 CORBIDI, Centro de Ornitología y Biodiversidad, Calle Sta. Rita 105 Oficina 202, Urb. Huertos de San Antonio, Surco, Lima, Perú.

3 Inspectorate SERVICES Perú S.A.C., Av. Elmer Faucett 444, Lima, Perú.

* Corresponding Author. E-mail: jquinones@imarpe.gob.pe

ABSTRACT: The presence of the Yellow-bellied Sea Snake (*Hydrophis platurus*) in the Southeast Pacific is rarely reported, with only one confirmed observation from northern Perú made in the early 1950s. We present new information based on a live-stranded specimen recently found in Peruvian waters, having washed ashore at Máncora (04.1255° S, 81.0958° W) in northern Perú on 12 July 2012. This stranding was associated with a Modoki El Niño warm event, since positive sea surface temperature (SST) anomalies up to 2.5°C were registered at this time.

DOI: 10.15560/10.6.1563

The sea snake *Hydrophis platurus* (Linnaeus, 1766) (formerly *Pelamis platurus*) is a pelagic marine species belonging to the family Elapidae. The species was recently classified within the “core *Hydrophis* group”, a broadly paraphyletic group with several other genera nested within it, and the use of a single genus for that clade, *Hydrophis* Latreille, 1802, was recommended (Sanders *et al.* 2013). The genus is widely distributed throughout the tropical Indian and Pacific oceans, from East Africa to Central America (Graham *et al.* 1971). In the eastern Pacific, *Hydrophis platurus* is distributed from the coasts of the Gulf of California (Mexico) to northern Perú (including the Galapagos Islands). Isolated individuals have been found as far north as San Clemente, California (Alvarez and Hernandez 1998; Campbell and Lamar 2004), with few reports from the Atlantic Ocean. This species has the largest distribution of any snake species in the world, with low levels of genetic variation throughout its populations, indicating a high rate of gene flow throughout the Pacific region (Shelly *et al.* 2012).

In Perú, almost nothing is known about its ecology and population size due to logistical difficulties and lack of studies. What is known is based mainly on grey literature with scarce anecdotal information from offshore waters, with very few incidental captures by artisanal fishermen and rare strandings of few individuals during summer months; *Hydrophis platurus* has been observed off Tumbes and Piura, the northernmost Peruvian provinces, and briefly described in an internal report of the Peruvian Ministry of Health, but neither geographical location nor date were provided (Maguiña *et al.* 2000). We present here a new record of a live-stranded individual, having occurred in front of the Hotel “Las Arenas,” south of Máncora in northern Perú (Figure 1). The presence of the species in Perú has not been formally confirmed for more than four decades. Graham *et al.* (1971) were the last to mention the occurrence of *H. platurus* in northern Peruvian waters, referring to Ekman *et al.* (1953).

The specimen was stranded on a sandy beach at 04.1255° S, 81.0958° W (WGS84 datum, 0 m) on 12 July 2012. The individual was still alive when found (Figure 2), showing passive and non-aggressive behavior, and was collected by Claudio Barragán. The specimen was first tentatively released in open water. However, the animal appeared too weak to swim and was washed ashore after each attempt (three in total). The individual became motionless and only reacted passively and slowly to stimulus and it died after three hours. The specimen

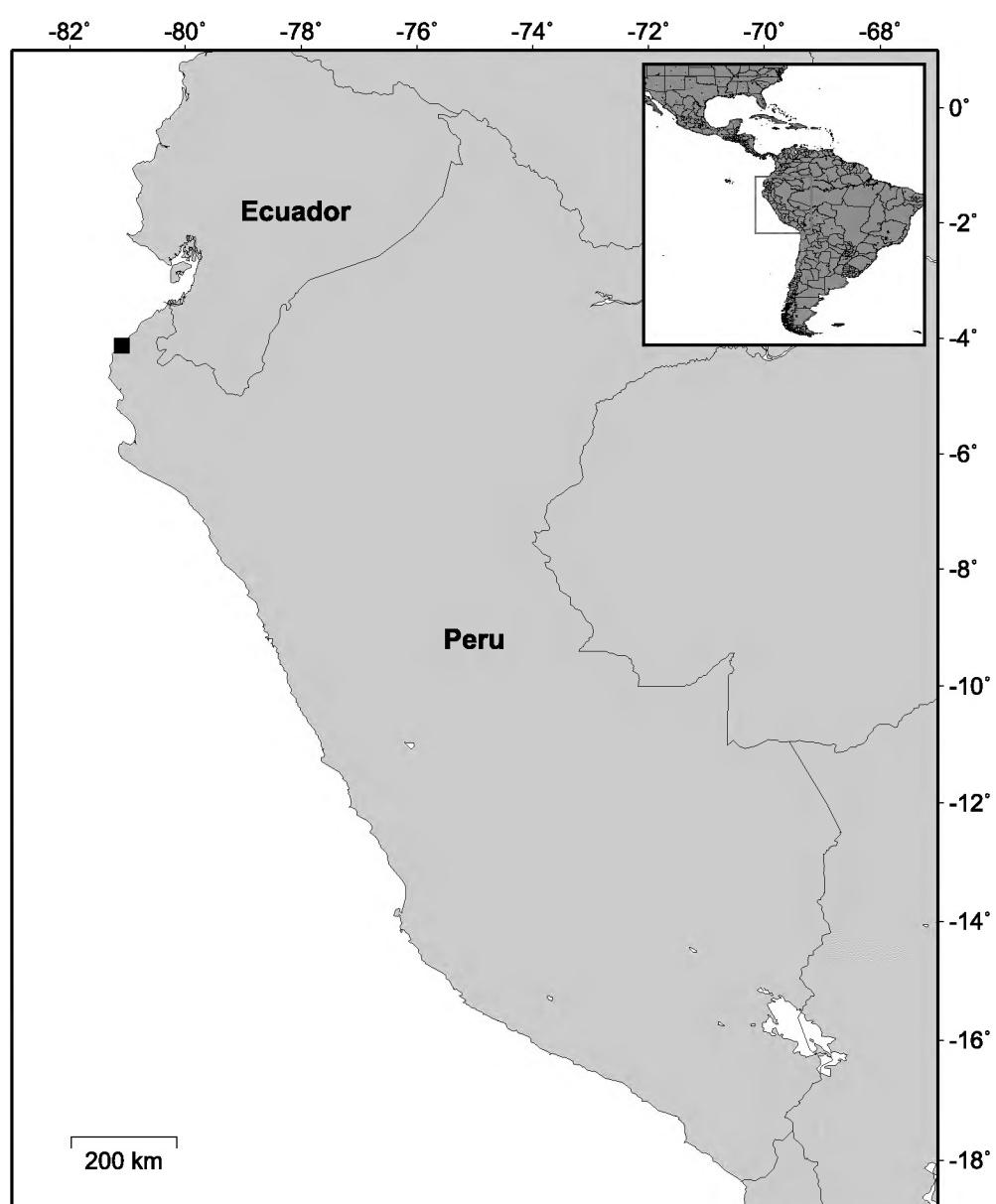


FIGURE 1. Map showing the location where the sea snake was found (black square).



FIGURE 2. Two upper photographs show the individual in Mancora immediately after capture, two lower photographs show the preserved individual (CORBIDI 13619). Top photographs by Claudio Barragan and bottom ones by Karla Garcia Burneo.

was preserved in formaldehyde (20%) and deposited in the Herpetological Department Collection of the Non-Government Organization CORBIDI (Ornithological and Biodiversity Center) in Lima, Perú (CORBIDI 13619). Here follows a brief description of the specimen: adult male, total length 660 mm, tail length 80 mm, head long and flattened, large scales on upper head, 10 supra-caudal scales, 11 infra-caudal scales, 56 dorsal rows at the midbody, squared and juxtaposed small dorsal scales, 428 small and divided ventral scales, 49 sub-caudal scales, laterally flattened tail, dorsum black contrasting with a light brown belly, dorsal coloration abruptly differentiated from the ventral color by a uniform 0.5 cm width yellowish band extending from the rear of the head to the origin of the tail, tail with black and yellow reticulations.

Hydrophis platurus regulates its body temperature by absorbing solar radiation at the surface of the water, and by expelling heat while diving. The northern distribution of the species coincides with the 18°C surface isotherm, with a southern limit in the Eastern Pacific noted at 5° S (Graham et al. 1971) during all seasons due to the influence of the cold Peruvian Current. SST where we found the snake was 19°C. During the austral autumn and early winter of 2012 an El Niño Modoki warm event took place in Perú, increasing the SST anomalies between +0.6 and +2.5°C (June 2012), and sub-surface anomalies up to +2 and +4°C (~22-23°C) in May and June 2012, respectively (Informe ENFEN 2012). However, no conclusive evidence could be found regarding the influence of warm waters on the migration of tropical *Hydrophis* species in the area since only one individual was stranded. Nevertheless, the present report contributes to the knowledge of *H. platurus* distribution and occurrence in northern Perú.

ACKNOWLEDGMENTS: We deeply thank Pablo J. Venegas from the Herpetological Division of CORBIDI (Centro de Ornitológia y Biodiversidad) for identifying the species. We also thank Grant Adams for the English review, and Ivan Ineich for pertinent remarks on a previous version of this manuscript. The authors wish to acknowledge use of the Maptool program for analysis and graphics in this paper. Maptool is a product of SEATURTLE.ORG (information is available at www.seaturtle.org).

LITERATURE CITED

- Alvarez-Leon, R. and J.I. Hernández-Camacho. 1998. Notas sobre la ocurrencia de *Pelamis platurus* (Reptilia: Serpientes: Hydrophiidae) en el Pacífico Colombiano. *Caldasia* 20(2): 93-102 (<http://www.revistas.unal.edu.co/index.php/cal/article/view/17474>).
- Campbell, J.A., W.W. Lamar and E.D. Brodie. 2004. *The Venomous Reptiles of the Western Hemisphere*. Ithaca, New York: Comstock Publishing (Cornell University Press). 782 pp.
- Ekman, S. 1953. *Zoogeography of the Sea*. London: Sidgwick & Jackson. 417 pp.
- Graham, J.B., I. Rubinoff and M.K. Hecht. 1971. Temperature physiology of the Sea Snake *Pelamis platurus*: An index of its colonization potential in the Atlantic Ocean. *Proceedings of the National Academy of Sciences* 68(6): 1360-1363 (<http://www.pnas.org/content/68/6/1360>, short).
- Informe ENFEN, 2012. *Comunicado Oficial ENFEN N°6-2012, Comité Multisectorial encargado del estudio Nacional del fenómeno El Niño*. Lima, Perú. 2 pp.
- Maguiña, H., C. Maguiña, C. Mosquera and V. Laguna. 2000. *Ofidismo, Módulos Técnicos, Serie de Documentos Monográficos*, Ministerio de Salud (MINSA), Oficina General de Epidemiología (OEG) e Instituto Nacional de Salud (INS), Lima, Perú. 57 pp.
- Sanders, K.L., M.S. Lee, T. Bertozzi and A.R. Rasmussen. 2013. *Multilocus phylogeny and recent rapid radiation of the viviparous sea snakes (Elapidae: Hydrophiinae)*. *Molecular Phylogenetics and Evolution* 66(3): 575-591 (doi: 10.1016/j.ympev.2012.09.021).
- Shelly, C.M., A. Solorzano, J.B. Pfaller and H.B. Lillywhite. 2012. Preliminary Insights into the phylogeography of the Yellow-bellied Sea Snake, *Pelamis platurus*. *Integrative and Comparative Biology* 52(2): 321-330 (doi: 10.1093/icb/ics088).

Received: April 2014

Accepted: October 2014

Published online: December 2014

Editorial responsibility: Philippe Kok